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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/630,964	07/30/2003	Michael Brent Ford	4148P2693	1768

23504 7590 12/15/2004

WEISS & MOY PC  
4204 NORTH BROWN AVENUE  
SCOTTSDALE, AZ 85251

EXAMINER
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LOPEZ, FRANK D

ART UNIT	PAPER NUMBER
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3745

DATE MAILED: 12/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/630,964	FORD, MICHAEL BRENT	
	<b>Examiner</b>	<b>Art Unit</b>	
	F. Daniel Lopez	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____.  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                                    |

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

Claims 1, 2 and 4-7 are rejected under 35 U.S.C. § 102(e) as being anticipated by Doll (see e.g. paragraph 9 and 39, also fig 3B for the ball and seat).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 1 and 3 are rejected under 35 U.S.C. § 103 as being unpatentable over Sugioka et al in view of Doll. Sugioka et al discloses a method of reducing wear on components of an axial piston compressor (fig 1) comprising providing first and second components, being shoes (18A) in moving contact with a swash plate (15), during operation; coating the swash plate with amorphous carbon (i.e. graphite, paragraph 26, which includes thickness values) having a thickness between 6 and 24 microns (a range between 0.0002 and 0.0008 inches equals a range between 5 and 20 microns); but does not disclose that the compressor is part of an oil pumping system.

Doll teaches that an axial piston pump can be used to pump oil (paragraph 3 and 6).

Since Sugioka et al teaches details of an axial piston pump and Doll teaches that an axial piston pump can be used to pump oil; it would have been obvious at the time

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the invention was made to one having ordinary skill in the art to use the compressor of Sugioka et al to pump oil, as taught by Doll, as a matter of engineering expediency.

Claims 1 and 3-8 are rejected under 35 U.S.C. § 103 as being unpatentable over Raymond in view of Doll and Warnock. Raymond discloses a method of reducing wear on components of a radial piston pump comprising providing a traveling ball valve (65) and seat (66) type check valve, a standing valve ball (85) and seat (84) type check valve, a plunger (50) and a barrel (49); but does not disclose that the coating all of the above components are coated with amorphous carbon.

Warnock teaches that ball valve and seat type check valves are made of hardened heat resistant carbon steel (column 3 line 51-53);, which suggests to one of ordinary skill in the valve art, that this type of valve is subject to wear due to its movement.

Doll teaches, for components of radial piston pumps (e.g. fig 2) subject to wear, including plungers in a barrel (e.g. paragraph 37), that both components, moving against each other, should be coated with amorphous carbon (e.g. paragraph 31), for the purpose of reducing friction and increasing fatigue life (e.g. abstract).

Since Doll teaches coating plungers and barrels of a radial piston pump, and Raymond has a radial piston pump; it would have been obvious at the time the invention was made to one having ordinary skill in the art to coat the plungers and barrel of Raymond al with amorphous carbon, as taught by Doll, for the purpose of reducing friction and increasing fatigue life.

Since one of ordinary skill in the valve art would understand the teaching of Warnock to mean that ball valve and seat type check valves are subject to wear, since Doll teaches coating components of a radial piston pump subject to wear, and Raymond has a radial piston pump; it would have been obvious at the time the invention was made to one having ordinary skill in the art to coat the ball valve and seat type check valves (both standing and traveling) of Raymond al with amorphous carbon, as taught by Warnock and Doll, for the purpose of reducing friction and increasing fatigue life.

Claims 2 and 9 are rejected under 35 U.S.C. § 103 as being unpatentable over Raymond in view of Doll and Warnock, as applied to claims 1 and 8, respectively, above, and further in view of Sugioka et al. The modified Raymond discloses all of the elements of claims 2 and 8, but does not disclose that the coating has a thickness between 0.0002 and 0.0008 inches (equivalent to a range between 5 and 20 microns).

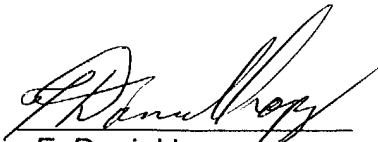
Sugioka et al teaches, for a method of reducing wear on a fluid pump having a set of components slidingly contacting each other, wherein one of the components has a low friction coating including amorphous carbon, that the coating has a thickness between 6 and 24 microns.

Since the modified Raymond doesn't disclose what the thickness of the coating is, whereas Sugioka et teaches a thickness of a comparable coating; it would have been obvious at the time the invention was made to one having ordinary skill in the art to the coatings of the modified Raymond with a thickness between 6 and 24 microns, as taught by Sugioka et al, as a matter of engineering expediency.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Lopez whose telephone number is 571-272-4821. The examiner can normally be reached on Monday-Thursday from 6:15 AM -3:45 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Look, can be reached on 571-272-4820. The fax number for this group is (703) 872-9306. Any inquiry of a general nature should be directed to the Help Desk, whose telephone number is 1-800-PTO-9199.

  
F. Daniel Lopez  
Primary Examiner  
Art Unit 3745  
December 10, 2004